



Digital Inequality, Educational Opportunities, and Social Mobility Among University Students: A Sociological Perspective

Aniya Kazmi¹, Mahnoor Jamal², Dr. Sakhy Mehmood³, Muhammad Adnan Sial⁴

¹ International School, Manila

Email: Aniya.Kazmi@gmail.com

² Karachi Grammar School

Email: m.jamal9609@kgs.edu.pk

³ University of Poonch, Rawalakot, AJK

Email: Sakhymehmood@upr.edu.pk

⁴ PhD Scholar, Bahauddin Zakariya University, Multan

Email: adnansial77@gmail.com

ARTICLE INFO	ABSTRACT
Submission: July 07, 2026 Revised: July 25, 2026 Accepted: August 25, 2026 Available Online: September 07, 2026 Keywords: <i>digital inequality, educational opportunities, social mobility, higher education, digital divide, university students, digital skills, Pakistan</i> Corresponding author: Aniya Kazmi Email: Aniya.Kazmi@gmail.com	This mixed-methods study examined the sociological relationship between digital inequality, educational opportunities, and perceived social mobility among university students in Punjab and Sindh, Pakistan. The study employed an explanatory sequential mixed-methods design, with quantitative data collected through an adopted structured questionnaire and qualitative data obtained through open-ended responses. A total of 420 university students participated in the study, including 400 respondents in the quantitative phase and 20 participants in the qualitative phase. Quantitative data were collected through Google Forms and analyzed using frequencies, percentages, descriptive statistics, Pearson correlation, simple linear regression, and multiple linear regression, while qualitative responses were examined through thematic analysis. The findings showed a significant negative relationship between digital inequality and educational opportunities ($r = -.542, p < .001$). Digital inequality also significantly and negatively predicted perceived social mobility ($\beta = -.424, p < .001$), whereas educational opportunities significantly and positively predicted perceived social mobility ($\beta = .531, p < .001$). Furthermore, digital inequality and educational opportunities jointly explained 36.5% of the variance in perceived social mobility. The qualitative findings identified four major themes: digital access inequality, digital skills and technology use, educational opportunities, and educational and career development. Participants reported that unequal access to devices, Internet connectivity, digital competencies, academic resources, institutional support, and professional opportunities influenced their educational participation and future career prospects. The study concludes that digital inequality represents an important contemporary dimension of educational and social inequality and may constrain students' educational opportunities and perceived prospects for socioeconomic advancement. The findings highlight the need for equitable digital infrastructure, affordable connectivity, digital-skills development, institutional support, and inclusive educational policies within Pakistani higher education.

Introduction

The rapid digital transformation of higher education has affected the ways university students learn, communicate, engage, and prepare in and out of the classroom. The components and systems of higher education in the digital age are online libraries, learning management systems, virtual classrooms, academic databases, and digital communication. These elements and components of

university education have the capacity to enhance educational opportunities, but the benefits of this technology are not distributed evenly. These technologies are more Socio-economically advantageous to some students than others. From a social perspective of inequality, technology has the potential to change how social inequities are reproduced and maintained. Largely, students' socioeconomic disparities are evident in digital access and are further differentiated in digital involvement and the educational benefits technology provides (Ragnedda & Muschert, 2013)

As a result, digital inequality extends beyond the absence of Internet access. Digital inequality, as a multidimensional phenomenon, includes inequalities in access to devices and connections, skills, digital competencies, patterns and quality of use, and digital participation (Sianou-Kyrgiou & Tsiplakides, 2011). When dealing with the university student population, the presence of Internet access is not that significant if it means students have low quality technology and poor digital participation. The social inequities are the greatest concern, as these differences have the potential to maintain the existing social inequities (Wang & Huang, 2025).

Laptops, reliable internet, personal study spaces, and functional digital skills become more accessible to students from rich families. Students from less wealthy families may rely on smart devices, shared hardware, and unpredictable internet (Selwyn, 2010). Digital inequities affect a student's ability to engage in digitally mediated learning and access different learning opportunities. The results from studies done on higher education point to a student's level of digital reading, the student's level of motivation, digital skills, attitude towards digital literacy, and the level of digital support offered by the education institution which not only affect the student's academic experiences, but also the perception of the student's level of achieved learning (INAMDAR, 2025). Similar research advances the argument that digital and social inequities established in an individual's economic and social status are strengthened by digital inequities and the resulting social positions (Ahyar et al., 2026).

Digital Inequality

The divide or inequities in access to digital technologies are referred to as the digital divide. Early studies focused on the digital divide in terms of ownership of digital and internet technologies. More recent studies on digital inequities focus on the multiple dimensions of digital participation. Students may have internet access, but vary in the types and capabilities of the digital technologies they are able to use and in their digital skills relative to using tools to search the internet, connecting the resources to learning, and ability to transform digital resources into learning support (Brown, 2013).

Digital inequities, therefore, provide multiple dimensions of educational stratification in higher education. The first dimension describes materials needed to access education and includes computers, smartphones, tablets, reliable Internet connections, software, and a suitable study environment (Lin, 2020). The second dimension addresses the ability to search for academic information, digitally assess the credibility of information, navigate different learning platforms, and digitally engage and solve problems (Loh et al., 2023). The third dimension speaks to the quality of digital engagement, and the main concern here is that some students use technology for entertainment or for basic communication. Especially in Pakistan, this group of students might not have the same benefits for their education as those who are able to use technology for academic research, collaborative learning, analysis of data, digital reading, and professional development (Van de Oudeweetering & Agirdag, 2018).

There is also a great deal of intersection between socioeconomic status and digital inequality. More wealthy families can provide better quality equipment, broadband, and study spaces, and have opportunities for digital skill development (Brown, 2013). Disadvantaged economic families have problems of access and usage. It is important to note that digital inequality does not end when digital resources are made available. It is often the case that digital resources are sanctioned on an unequal basis, thus having varying levels of social value (Oyedemi, 2012). For that reason, digital inequality should be addressed as a social issue.

Educational Opportunities

Research on Pakistani universities demonstrates that students from rural and remote areas faced issues connected to access to Internet service and suitable digital devices and suffered from disadvantages caused by their inability to use virtual learning systems. Students from better off urban and private university backgrounds were less disadvantaged by these barriers (Wei, 2026). Research on Pakistan, more generally, shows that socio-economic disparities, the urban-rural divide, gender disparities, educational disparities, infrastructural deficits, and other conditions contribute to digital inequities (Rolfe, 2017). Digital gaps within the higher education context ought to be analyzed within the entire social inequality matrix, rather than as an issue of technology in isolation (Mac Fadden et al., 2024).

In the context of education, opportunities refer to students' ability to access, engage with, and benefit from education-related resources. In higher education, opportunities extend beyond simply gaining admission into a university (Ilie et al., 2020). They

include the quality of teaching and learning resources, faculty mentorship, research, extra-curricular activities, professional internships, and academic support. As a result, two students studying in the same university can hold the same formal education status, and yet, have dramatically different educational opportunities, based on their access to financial resources, social capital, institutional support, physical and social proximity, and technology (Matzat et al., 2020).

Universities enroll students at various stages of economic, cultural, and social development. A recent study demonstrates that social backgrounds influence educational outcomes. It shows educational and social domains cannot be entirely different. Students' social and educational contexts are intertwined. Educational inequalities persist due to students' social backgrounds (Goldthorpe, 2014).

Social Mobility

Social mobility is the movement between social positions during one individual's lifetime or across generations. In higher education, social mobility is the possibility for young adults or individuals from lower social classes to gain access to higher socioeconomic positions, which were previously occupied by their parents (Gul, 2024).

Education has been perceived as an important institution through which social orders distribute personnel to their respective social positions in accordance with their achievements. From such a perspective, universities have the potential to serve as agents of social mobility by offering credentials, knowledge, skills and the necessary professional networks needed to enable individuals to secure improved jobs and social status (Robinson et al., 2015).

The claim is not disproven, but sociological research shows the sense of entitlement that comes from thinking social mobility is paired with higher education. A university can be an institution of opportunity and an instrument of social reproduction (Selwyn & Facer, 2014). Students from a social class of a high status have more personal wealth, are more integrated culturally, have more social connections, and have familiarity with and experience in the education field. Because of these factors, they can enjoy participation in a university more. It has been researched and shown that even without cost, tuition fees, there is no large transformation in the field of higher education, and the unresolved social differences and diverse forms of social institutions guarantee the continuation of inequalities (Calderón Gómez, 2021).

Consequently, in the case of increased higher education enrollment, educational participation may increase remarkably, but inequalities may possibly persist in the employment that graduates secure, in the status of the jobs they secure and in socioeconomic advancement (Sepúlveda & Lizama-Loyola, 2022). Research on higher education expansion and graduate employment in China, for instance, has shown that increased university access does not necessarily result in greater social mobility, since labor-market competition, institutional differentiation, and social inequalities still shape graduate employment (Cheng, 2024). Similarly, (DiMaggio et al., 2004) have shown that greater social mobility is not an inevitable consequence of higher education reforms aimed at increasing employability, when other social inequalities are not addressed (Naseer, 2024).

Research Objectives

The study aims to examine the sociological relationship between digital inequality, educational opportunities, and social mobility among university students. The specific objectives are:

1. To examine the level of digital inequality among university students in terms of access to digital devices, Internet connectivity, digital skills, and quality of digital technology use.
2. To assess the extent to which digital inequality is associated with students' educational opportunities, including access to academic resources, learning activities, institutional support, and educational development.
3. To determine the relationship between digital inequality, educational opportunities, and perceived prospects for social mobility among university students.

Problem Statement

Although the digitalization of higher education has created new opportunities to learn and expand access to academic resources, it has done so in unequal ways. Unequal access to digital resources, the Internet, and unequal status and wealth condition people's ability to learn (Kuhn et al., 2023). Though research has focused primarily on the role of existing digital inequities on access and participation in education and on digital inequities and their role on inequities on academic outcomes, it has not addressed digital

inequities and their role on inequities on access to education and social mobility. This research aims to broaden understanding on the role of digital inequities and how it positively impacts the socioeconomic condition of learners (Datoo, 2021).

Significance of the Study

This research represents a gap in the existing body of research by examining the impact of digital inequalities on educational opportunities and social mobility rather than addressing digital inequalities from a mere access to technology frame. This research then aims to examine and determine how uneven digital resources and skills result in differential educational opportunities and socioeconomic outcomes for students (Ragnedda et al., 2022; Tozan, 2024). This research aims to provide universities and policymakers with evidence to create more equitable digital infrastructures, digital skills, and affordable digital connectivity.

Literature Review

The literature review includes digital inequalities, educational opportunities, and social mobility from a university student perspective. Recent studies have examined digital inequalities as a multidimensional issue, including digital tools, digital skill development, digital technology, and digital resources (Pitzalis & Porcu, 2024).

Digital Inequality Among University Students

The digital divide used to be about getting people online, but now researchers look at differences in tech. This could mean having a computer that runs fast enough, reliable Internet, or even how students and participants use the internet. This means that not having Internet access doesn't mean you lack access to online education. There is a digital divide based on how ready someone is to use the Internet, their digital skills, and the support systems they have (Brown, 2013).

Higher education has added even more digital requirements, including learning management systems, digital libraries, and virtual classrooms. All of these require the learner to have digital skills and an adequate digital support system to complete coursework and research (Puckett, 2022).

Digital inequality is caused by socio-economic status and geographical location. Privileged students have private study spaces, fast Internet connections, laptops, and access to educational apps. Less privileged students may share one computer amongst many students, have slow Internet and limited data. Inequalities in online learning are caused by social inequalities (Neves & Mead, 2021).

Pakistani students from rural and low-income areas have the greatest challenges related to remote education. Challenges among students from urban and higher socio-economic areas are related to poorer access to online resources. Pakistani studies have shown that students' ICTU (information and communication technology use) level determines their ability to fully utilize technology in educational processes. Digital inequality takes a broader approach than simply the availability of the Internet. It must also consider the level of digital skills and the use of technology in a meaningful way (Ma, 2021).

Educational Opportunities in Higher Education

The term educational opportunity is multifaceted and encompasses university students' resources, support, and experiences to develop their academic and professional skills. This includes educational support services and facilities as well as a quality education, appropriate guidance, and digital resources. Thus, ensuring that all students enroll is not the same as ensuring equal educational opportunities. Students would still need to have the same capabilities to utilize facilities (Gui & Büchi, 2021).

Socioeconomic status directly correlates with the inequality and challenges that students face within the educational system. Students from higher classes and social status are progressively better able to realize the benefits of the education system than their lower class counterparts due to discrepancies in social capital, prior educational opportunities, and supportive family units (Laskar, 2023). The digital divide has further exacerbated educational inequities as academic participation has increasingly become centered around digital resources and technology (Goudeau et al., 2021).

Pakistan has problems accessing digital and educational technologies in remote and rural regions. These issues impact learning and further widen existing education gaps. Digital divides existing on different levels of formal, informal, and popular education affect university students in Pakistan. As reported by (Zilian & Zilian, 2020) among Pakistani university students, there are gaps in digital access, levels of technological resources, and digital skills. The digital divides of the formal systems of education translate into university students not being able to convert their formal enrollment to university into active engagement in the education system (Reynolds et al., 2022).

Social Mobility and Higher Education

Social mobility is the ability to change socio-economic positions across and within generations. Some of the positive externality effects associated with the possession of a university degree include access to credentials, knowledge, and employment (Pettalongi et al., 2024). However, possessing a university degree is not a guarantee for upward social mobility. Cultural capital, networks, systems, market conditions, and social class are among the many factors that shape outcomes and outlooks (Tang et al., 2025).

(Azubuike et al., 2021) shows on Pakistan that educational expansion is not synonymous with social equality. Disadvantaged groups continue to experience social closure and are characterized by limited or no social and cultural capital, insufficient mentoring, and inequitable market opportunities. Therefore, education can be both a route and a mechanism to social inequality.

Social mobility depends on the availability of educational opportunities beyond enrollment. There are positive educational equity outcomes when learners are provided with opportunities for academic resources, professional networks, scholarship, research, mentoring, and support to develop social and economic capital. The opposite is true of disadvantaged learners (Aziona & Nhedzi, 2021).

Digital Inequality and Educational Opportunities

Learning at university is dependent on the use of technology and has resulted in digital separation and inequality in access to education. There is a digital divide in using technology and digital skills, but the divide can be the difference in the opportunities that technology can offer (Mesa, 2023).

Technology is reshaping education and has the potential to create educational inequalities, but this is not the case for digital inequalities. In education, there are students that have adequate technology, and have the potential to improve their digital skills, and students that suffer from the digital divide (Matzat et al., 2020).

The digital divide is evident in education in Pakistan, and students from rural, remote areas as well as students from marginalized communities have more technology-related barriers than their urban/city counterparts. Digital skills and adoption of ICT have the potential to impact the quality and outcomes of education (Brown et al., 2021).

Educational Opportunities and Social Mobility

Education can contribute to social mobility by providing students with the necessary educational and professional skills as well as providing research and internship opportunities. Education does have the potential to improve social and economic outcomes for an individual, however, inequities in educational opportunities and unequal distribution of employment hinders the social and economic gains from education (Sanders & Scanlon, 2021).

Increasing access to education won't help rural Punjab students much. Even with education, unequal social and cultural resources, local relations of power and labor, and market conditions will still limit the benefits rural Punjab students can gain from education (García-Martín & García-Sánchez, 2022). Because of these factors, the same education can create different levels of social mobility based on the student's social background and support.

In these cases, the quantity of education is less important than the quality of the educational opportunities. Additional educational support and opportunities to develop professional networks, do research, and pursue a career can help students increase their social and economic status. Educational opportunities can help create a pathway from high education to social mobility (Naseer, 2024).

Synthesis of the Literature and Research Gap

The literature demonstrates that digital inequality extends beyond Internet access to include device availability, connection quality, digital skills, technology use, and the ability to obtain meaningful benefits from digital resources. These differences can create unequal educational experiences, particularly among students from disadvantaged socioeconomic, rural, and marginalized backgrounds (Eichhorn et al., 2022). Similarly, educational opportunity involves more than university enrollment. Differences in academic resources, digital support, research opportunities, professional networks, and career preparation can influence students' ability to develop the human and social capital necessary for socioeconomic advancement. Higher education can therefore promote social mobility while simultaneously reproducing existing inequalities (Heifetz & Jaffe, 2023).

Theoretical Framework

This study draws on Bourdieu's Theory of Social Reproduction and Capital and the Digital Inequality/Second-Level Digital Divide. These theories show how varying economic, cultural, and social resources may impact students' access to digital technologies and their subsequent educational opportunities and possible socioeconomic position in the future (Goudeau et al., 2021).

Bourdieu's Theory of Social Reproduction and Capital

Bourdieu highlighted that students have unequal social, cultural, and economic capital, and this shapes their potential to gain from higher education. Students from better-off socioeconomic backgrounds may have better digital equipment and Internet access, while students from better-off backgrounds may have developed better digital skills, academic knowledge, and social networks. Hence, higher education may promote social mobility, but at the same time, it may perpetuate social inequalities (Ingram & Gamsu, 2022).

Digital Inequality Perspective

Digital inequality expands the digital divide by Sluper, and it includes variance in digital opportunities, the use of digital tools, skills and the rewards from digital engagement. Thus, students with Internet access may still experience a digital divide due to differences in digital resources and participatory skills. These disparities may accumulate over time and help sustain socioeconomic disadvantages (Oyedemi, 2012).

Research Hypotheses

1. **H1:** Digital inequality is significantly associated with educational opportunities among university students.
2. **H2:** Digital inequality is significantly associated with perceived social mobility among university students.
3. **H3:** Educational opportunities are significantly associated with perceived social mobility among university students.
4. **H4:** Digital inequality and educational opportunities significantly predict perceived social mobility among university students.

Methodology

Research Design

The study's methodology combines explanatory mixed research designs. Quantitative data was collected first to examine digital inequality, educational opportunities and perceived social mobility. Subsequent collection of qualitative data was aimed at providing an explanation of the quantitative data. Structured questions were used for the collection of data in the quantitative phase, whereas data collection in the qualitative phase was done using unstructured/open-ended questions.

Population

The population of the study was university students from higher education institutions in Punjab and Sindh, Pakistan. For collection of data in Punjab, students were visited from Bahauddin Zakariya University, University of the Punjab, Government College University Faisalabad, University of Sargodha and Islamia University of Bahawalpur. In Sindh, students were visited from the University of Karachi, University of Sindh, Shah Abdul Latif University and Institute of Business Administration Karachi. The population of the study consisted of both graduate and post graduate students who used digital technologies for educational activities.

Sampling Technique

The sampling technique used in the quantitative phase was multistage sampling to collect students from universities in Punjab and Sindh. In order to ensure representation of the two provinces, stratification was done. In the qualitative phase, purposive sampling was done to collect participants with varying levels of digital access and educational experiences.

Sample Size

The quantitative phase of the study comprised 400 participants, while the qualitative phase comprised 20 participants. This means that the study was done on a sample of 420 participants.

Data Collection

Data collection was performed using a survey made using Google Forms. The survey was then shared via email, WhatsApp, and other student communication forums. Digital inequality was assessed using the Digital Capital Index adapted from measuring digital access, Internet connectivity, digital skills, and technology use. Educational opportunities were measured using adapted items taken from assessing academic resources, learning activities, and institutional support and educational development. Social mobility was assessed using the Perceptions of Socioeconomic Mobility Scale developed. The surveys were adapted for the context of a university. A pilot study was also conducted.

Data Analysis

Table 1 Demographic Characteristics of the Respondents (N = 420)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	207	49.3
	Female	213	50.7
Age	18–21 years	148	35.2
	22–25 years	176	41.9
	26–30 years	68	16.2
	Above 30 years	28	6.7
Province	Punjab	252	60.0
	Sindh	168	40.0
Residence	Urban	238	56.7
	Rural	182	43.3
Educational Level	Undergraduate	286	68.1
	Postgraduate	134	31.9
Year of Study	1st Year	91	21.7
	2nd Year	109	26.0
	3rd Year	103	24.5
	4th Year	83	19.8
	5th Year or above	34	8.1
University Type	Public	273	65.0
	Private	147	35.0
Socioeconomic Background	Low	103	24.5
	Middle	229	54.5
	High	88	21.0
Primary Digital Device	Smartphone	126	30.0
	Laptop	184	43.8
	Tablet	35	8.3
	Desktop Computer	75	17.9
Internet Type Mainly Used	Mobile Data	137	32.6
	Home Broadband/Wi-Fi	218	51.9
	University Internet	42	10.0

Demographic Variable	Category	Frequency (n)	Percentage (%)
Total	Other/Public Internet	23	5.5
		420	100.0

The demographic data revealed that 213 of the 420 respondents (50.7%) were women, 208 (49.3%) were men, and one (0.2%) was non-binary. The greatest proportion of respondents (41.9%) was in the age group 22-25 years, and the remaining respondents (58.1%) were in the age groups 18-21 years and older than 25 years. The greatest proportion of respondents (60%) were from the Province of Punjab. Most respondents lived in urban centers (56.7%) and were undergraduate students (68.1%). Most respondents (65.0%) studied in public universities, and most respondents (54.5%) belonged to the middle socioeconomic group. Digital resources that were most commonly used were laptops (43.8%) and the main source of Internet was home broadband or Wi-Fi (51.9%).

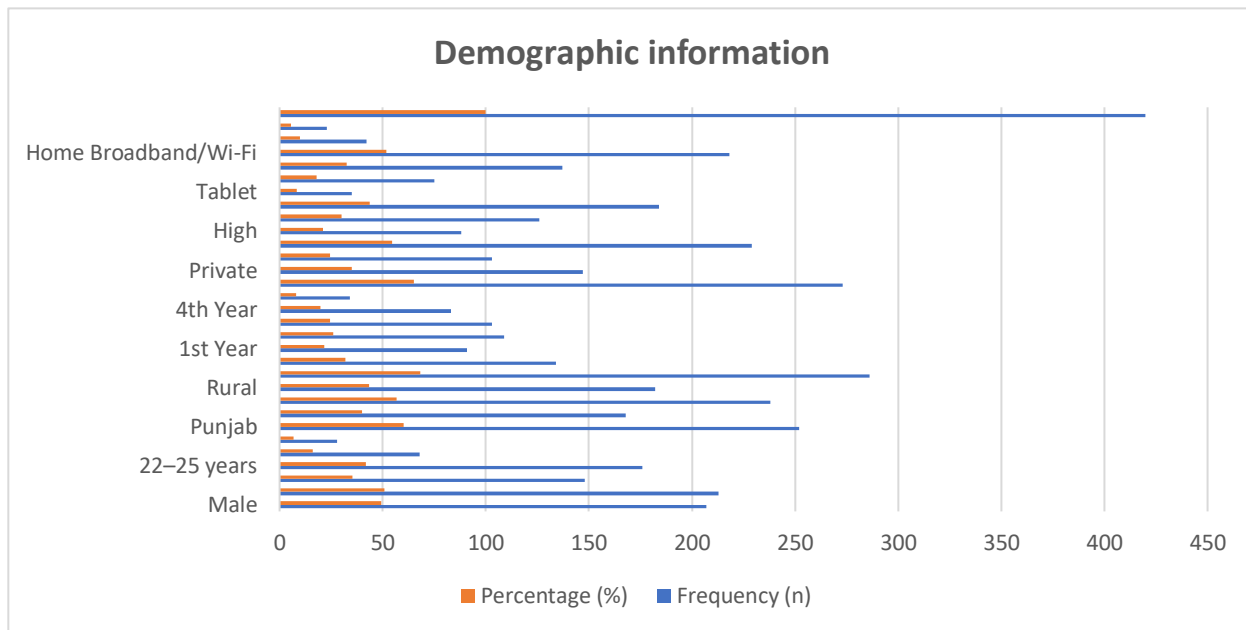


Fig 1: Demographic analysis of the respondents.

Table 2: Pearson Correlation Between Digital Inequality and Educational Opportunities (N = 420)

Variables	Digital Inequality	Educational Opportunities
Digital Inequality	1.000	-0.542
Educational Opportunities	-0.542	1.000
Sig. (2-tailed)	—	< .001
N	420	420

The results of Pearson's correlation analysis indicated that there is a significant moderate negative correlation between digital divide and educational opportunities in university students ($r = -.542$; $p < .001$). This indicates that the greater the digital divide, the lower the educational opportunities. Therefore, the results confirmed H1, which states that there is a negative correlation between digital divide and educational opportunities in university students.

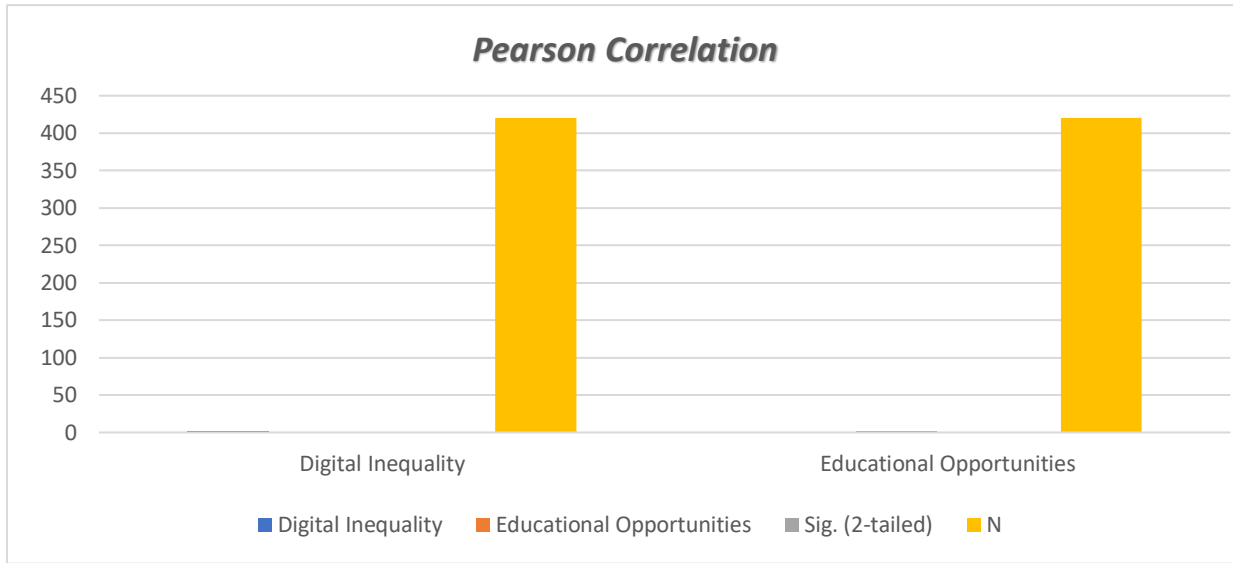


Fig 2: Pearson Correlation analysis Correlation Between Digital Inequality and Educational Opportunities

Table 3 Simple Linear Regression Analysis of Digital Inequality Predicting Perceived Social Mobility (N = 420)

Predictor	B	SE	β	t	p
Constant	4.218	0.184	—	22.924	< .001
Digital Inequality	-0.487	0.051	-0.424	-9.549	< .001
Model Statistics			R	R ²	Adjusted R ²
Digital Inequality → Perceived Social Mobility			0.424	0.180	0.178
			F		p
			91.18		< .001

Using the data provided, the results of the simple linear regression analysis reported that digital divide has a negative impact on the perceived social mobility of university students ($\beta = -.424$; $t = -9.549$; $p < .001$). This indicates that the greater the digital divide, the lower the perceived social mobility. The model accounted for 18.0% of the perceived social mobility ($R^2 = .180$), and the overall regression model was also significant ($F(1, 418) = 91.18$; $p < .001$). Therefore, H2 was confirmed, which stated the negative impact of digital divide on perceived social mobility of university students.

Table 4: Simple Linear Regression Analysis of Educational Opportunities Predicting Perceived Social Mobility (N = 420)

Predictor	B	SE	β	t	p
Constant	1.624	0.213	—	7.624	< .001
Educational Opportunities	0.628	0.049	0.531	12.816	< .001
Model Statistics			R	R ²	Adjusted R ²
Educational Opportunities → Perceived Social Mobility			0.531	0.282	0.280
			F		p
			164.25		< .001

Analysis of simple linear regression shows that for university students, educational opportunities can explain perceived social mobility with a value of $\beta = .531$, $t = 12.816$, $p < .001$. A positive sign on this value suggests that the opportunities for education that the students report positively contribute to the perceived social mobility. The overall model accounts for a value of 28.2% of the variance in the perceived social mobility ($R^2 = .282$), and the overall regression model is statistically significant, $F(1, 418) = 164.25$, $p < .001$. This suggests that H3 is sustained, and educational opportunities are a determining factor for university students' perceived social mobility.

Table 5: Multiple Regression Analysis of Digital Inequality and Educational Opportunities Predicting Perceived Social Mobility (N = 420)

Predictor	B	SE	β	t	p
Constant	1.087	0.241	—	4.510	< .001
Digital Inequality	-0.276	0.052	-0.241	-5.308	< .001
Educational Opportunities	0.519	0.056	0.438	9.268	< .001
Model Statistics	R	R ²	Adjusted R ²	F	p
Overall Model	0.604	0.365	0.362	119.83	< .001

The multiple regression analysis shows that digital inequality and educational opportunities are predictors of perceived social mobility among university students with $R^2 = .365$, $F(2, 417) = 119.83$, $p < .001$. In the model, digital inequality accounts for 36.5% of the perceived social mobility and has a negative, significant effect ($\beta = -.241$, $p < .001$), which shows that greater digital inequality result in lower perceived social mobility, and educational opportunities have a positive, significant effect ($\beta = .438$, $p < .001$), which shows that greater educational opportunities result in higher perceived social mobility. In this case, H4 is sustained, and digital inequality, and educational opportunities are predictors of perceived social mobility among university students.

Thematic Analysis

The responses were analyzed by using thematic analysis to understand how university students perceive digital inequality, educational opportunities and perceived social mobility. The analysis consolidated four main themes with related subthemes and codes.

Table 6: Themes, Subthemes, and Codes from the Qualitative Data

Theme	Subtheme	Codes
Digital Access Inequality	Device availability	Personal laptop, smartphone dependence, shared devices, outdated devices
	Internet connectivity	Unstable Internet, slow speed, limited coverage, connectivity interruptions
	Affordability	Expensive data packages, device costs, financial constraints
Digital Skills and Technology Use	Digital competence	Online research skills, academic software skills, information searching
	Quality of technology use	Academic use, productive use, entertainment-focused use
	Technical confidence	Confidence in using digital platforms, difficulty with LMS, technical support needs
Educational Opportunities	Access to academic resources	Online libraries, digital journals, e-books, learning materials
	Learning participation	Online classes, assignments, research activities, virtual learning
	Institutional support	Internet facilities, technical assistance, digital training
Educational and Career Development	Skill development	Digital skills, research skills, professional competencies
	Professional opportunities	Internships, networking, online training, employment information
	Future advancement	Career preparation, employment prospects, socioeconomic improvement

Theme 1: Digital Access Inequality

Participants described laptops, smartphones, reliable internet connections, and on-site technology as resources, and students described unequal access to these resources. Students with laptops and strong broadband connections were able to complete schoolwork and participate in online classes and had access to digital school materials; students who relied on smartphones or shared devices had more constraints. Financial limitations were noted as a large contributor to inequality of digital resources because devices, internet plans, and other maintenance costs limited students' participation in digital school activities. These results show that the inequality of digital resources has a lot more to do with the quality of resources than if students have an internet connection.

Theme 2: Digital Skills and Technology Use

Participants noted that, even with a device, some students were unable to use digital school resources. There were large differences when participants described online research, access to academic resources, digital school resources, and software. Students with more advanced digital skills were confident in completing school work and using available digital resources, while students with limited digital skills needed support. The results of this study show that advanced digital skills help students use available school resources.

Theme 3: Educational Opportunities

The third theme focused on the ways digital resources shape students' educational opportunities. Participants described digital technologies as means for accessing online libraries, academic journals, e-books, recorded lectures, virtual classes, assignments, and research materials. However, participants also described the unequal digital access as an obstruction to students' participation in these activities. Participants described students with digital resources as having more opportunities to engage with academic resources and learning activities. Participants described students with digital resources having studies that are not disrupted. Along with the digital resources, participants also described the importance of institutional support, including the availability of university Internet, and the provision of digital resources and support to students. The available evidence describes digital inequality as resulting in differences in the ability to meaningfully participate in educational opportunities.

Theme 4: Educational and Career Development

The fourth theme described the nature of connections between educational opportunities and students' future careers and socioeconomic conditions. Participants described digital resources, virtual learning, online research, digital professional training, and digital networking as resources to build their future careers. Participants described positive relations between access to digital resources and participant engagement and educational opportunities, perception of readiness for employment, and the pursuit of employment and career advancement. Participants described a lack of adequate digital resources as a means to develop the skills required for employment and accessing career opportunities. The results show that educational opportunities are the most likely means to connect digital resources to social mobility as the educational opportunities provide students with the knowledge and skills to advance in their careers and offer students the networks and information required for socioeconomic advancement.

Discussion

The analysis of data discovered a correlation between digital divide, education, and mobility. The digital divide negatively impacted the accessibility of education ($r = -.542$, $p < .001$). Students lacked the means to access the internet, devices, and digital skills. This resulted in a lack of education. The qualitative data projected those issues. The digital divide has been documented and will continue to worsen beyond lack of internet access (Badiuzzaman et al., 2021). Looking specifically at the educational divide, it will continue to impact students and the socioeconomic class, as digital resources will be increasingly important for gaining employment and continuing to build digital skills for networking, developing prospective businesses, and building other digital skills. However, possessing digital resources and technologies does not guarantee social mobility (Imran, 2023).

Opportunities for education positively impacted social mobility ($\beta = .531$, $p < .001$). This suggests that students who had the means to education resources, networks, and professional development and research, perceived more opportunities for social mobility. Students sought out and utilized education, training, internships, and other professional networks for social mobility. The findings support the theory that social mobility is the end goal that can be reached through higher education.

The model combining regressions was also significant, $F(2, 417) = 119.83$, $p < .001$, and explained 36.5% of social mobility perception. Digital inequality was a statistically significant plus predictor ($\beta = .241$), as was educational opportunities ($\beta = .438$).

Digital inequality had a lesser effect, showing that at least within the model, digital inequality is partially described by the opportunities typically provided within education (Helsper, 2021). This was not formally tested as a mediator. The model and the quantitative and qualitative data together support the proposed sociological model where social mobility is constrained by digital inequality and enhanced by educational opportunities (Jamil, 2021).

Qualitative Findings and Integration With Quantitative Results

The additional quantitative data also focused on the use of digital technology. The participants described participants described barriers to engaging in teaching and learning, stemming from inequality in digital access. The barriers to access digital means as well as inequality in digital skills reinforce the previous negative relationship between digital inequality and educational opportunities (Rydzewski, 2025).

Constraints linked to digital access have largely been replaced by digital skills in the second qualitative theme. Observations refer to the use of technology and digital media in teaching and learning (Cheng et al., 2021). Even if participants are able to gain coverage through the Internet or have a device, they may be disadvantaged if they lack the required skills to search the Internet for academic information, evaluate digital information, or use tools and technology in research. This supports the contemporary multidimensional nature of digital inequality (Janschitz & Penker, 2022).

The following two themes describe the pathway from technology to educational and socio-economic outcomes. Participants of this study appreciated how advances in technology facilitated various academic resources, online learning, institutional support, professional training, networking, and job seeking (Aissaoui, 2022). These examples helped understand why quantitative analysis demonstrated a positive relationship between educational opportunities and perceived social mobility. Therefore, social mobility perceived through the data is described in detail by the qualitative evidence and is not simply a repetition of the results (Mauermeister et al., 2025).

Conclusion

Digital divide is, above all, an educational and social inequality in the scope of higher education. As for greater digital divide, it meant lesser educational opportunities and diminished perceived social mobility, while greater educational opportunities meant greater perceived social mobility. The results from the multiple regressions confirmed that educational opportunities and digital divide influenced students' perceptions of social mobility. Developmental inequalities in devices, the Internet, digital skills, access to resources, and institutional supports influenced students' perceptions of their educational opportunities. The research confirms that the digital divide should not be treated as a technological account of perceived educational opportunities, but also as a social inequality that influences social mobility.

Future Implications

Future research needs to expand on these relationships by increasing sample size and geographical coverage across Pakistan. This will allow for findings to become more generalizable. Longitudinal studies would allow for more definitive conclusions to the question: do trends in digital inequity have a permanent impact on students' ability to complete their education, attain employment, and actually achieve socioeconomic mobility? Some of the things future research should address are the many layers of inequality, access to Micro- and Macro-level support, support through digital literacy, and social capital. Assuming this research is completed, universities and lawmakers should prioritize affordable Internet access and issue campaign pledges to provide disadvantaged students with these aforementioned resources. Additionally, future education research should study both urban and rural universities to identify specific inequities and try to formulate innovative approaches to move closer to social equity and create more equitable opportunities for education and employment.

References

1. Ahyar, M., Sarwadi, S., Wirham, W., Sidik, S., Aziz, M. F., Perwira, U., & Yani, A. (2026). Transformation of Teaching Practices in the Digital Era: A Sociological Perspective on Changes in Social Interaction and the Reproduction of Inequality. *Academicus: Journal of Teaching and Learning*, 5(1), 45-53.
2. Aissaoui, N. (2022). The digital divide: a literature review and some directions for future research in light of COVID-19. *Global Knowledge, Memory and Communication*, 71(8-9), 686-708.

3. Azionya, C. M., & Nhedzi, A. (2021). The digital divide and higher education challenge with emergency online learning: Analysis of tweets in the wake of the COVID-19 lockdown. *Turkish Online Journal of Distance Education*, 22(4), 164-182.
4. Azubuike, O. B., Adegboye, O., & Quadri, H. (2021). Who gets to learn in a pandemic? Exploring the digital divide in remote learning during the COVID-19 pandemic in Nigeria. *International journal of educational research open*, 2, 100022.
5. Badiuzzaman, M., Rafiquzzaman, M., Rabby, M. I. I., & Rahman, M. M. (2021). The latent digital divide and its drivers in e-learning among Bangladeshi students during the COVID-19 pandemic. *Information*, 12(8), 287.
6. Brown, P. (2013). Education, opportunity and the prospects for social mobility. *British Journal of Sociology of Education*, 34(5-6), 678-700.
7. Brown, P., Sadik, S., & Xu, J. (2021). Higher education, graduate talent and the prospects for social mobility in China's innovation nation. *International Journal of Educational Research*, 109, 101841.
8. Calderón Gómez, D. (2021). The third digital divide and Bourdieu: Bidirectional conversion of economic, cultural, and social capital to (and from) digital capital among young people in Madrid. *New Media & Society*, 23(9), 2534-2553.
9. Cheng, H., Lyu, K., Li, J., & Shiu, H. (2021). Bridging the digital divide for rural older adults by family intergenerational learning: A classroom case in a rural primary school in China. *International Journal of Environmental Research and Public Health*, 19(1), 371.
10. Cheng, Y. (2024). Digital Inequalities and Student Engagement in Higher Education: Understanding the Experience of Students Through Digital Ethnographic Approaches. *Proceedings of the International Conference on Networked Learning*.
11. Dato, A. K. (2021). Digital divide and social inequalities: Sociological perspectives on technology and education. In *Innovative education technologies for 21st Century teaching and learning* (pp. 191-198). CRC Press.
12. DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). From unequal access to differentiated use: A literature review and agenda for research on digital inequality. *Social inequality*, 1(1), 355-400.
13. Eichhorn, T., Jürss, S., & Hoffmann, C. P. (2022). Dimensions of digital inequality in the sharing economy. *Information, communication & society*, 25(3), 395-412.
14. García-Martín, J., & García-Sánchez, J.-N. (2022). The digital divide of know-how and use of digital technologies in higher education: The case of a college in Latin America in the COVID-19 era. *International Journal of Environmental Research and Public Health*, 19(6), 3358.
15. Goldthorpe, J. H. (2014). The role of education in intergenerational social mobility: Problems from empirical research in sociology and some theoretical pointers from economics. *Rationality and society*, 26(3), 265-289.
16. Goudeau, S., Sanrey, C., Stanczak, A., Manstead, A., & Darnon, C. (2021). Why lockdown and distance learning during the COVID-19 pandemic are likely to increase the social class achievement gap. *Nature human behaviour*, 5(10), 1273-1281.
17. Gui, M., & Büchi, M. (2021). From use to overuse: Digital inequality in the age of communication abundance. *Social science computer review*, 39(1), 3-19.
18. Gul, U. (2024). Digital Inequality, Socioeconomic Stratification, and Social Mobility in Developing Economies. *Pakistan Journal of Management Sciences and Technology (PJMST)*, 2(2), 07-12.
19. Heifetz, I., & Jaffe, P. G. (2023). Exploring the impact of industrialization on social mobility in rural communities: Towards inclusive and sustainable economic transformation. *Law and Economics*, 17(3), 218-236.
20. Helsper, E. (2021). *The digital disconnect: The social causes and consequences of digital inequalities*. SAGE Publications Ltd.
21. Ilie, D.-G., Neghină, R.-A., Mănescu, V., Ganciu, M.-R., & Militaru, G. (2020). New media, old problems: Social stratification, social mobility and technology usage. *INTED2020 Proceedings*.
22. Imran, A. (2023). Why addressing digital inequality should be a priority. *The Electronic Journal of Information Systems in Developing Countries*, 89(3), e12255.

23. INAMDAR, T. A. (2025). Digital divide: analysing the impact of unequal access to technology on social mobility. *Janus*, 16(2).
24. Ingram, N., & Gamsu, S. (2022). Talking the talk of social mobility: The political performance of a misguided agenda. *Sociological Research Online*, 27(1), 189-206.
25. Jamil, S. (2021). From digital divide to digital inclusion: Challenges for wide-ranging digitalization in Pakistan. *Telecommunications Policy*, 45(8), 102206.
26. Janschitz, G., & Penker, M. (2022). How digital are 'digital natives' actually? Developing an instrument to measure the degree of digitalisation of university students—the DDS-Index. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, 153(1), 127-159.
27. Kuhn, C., Khoo, S.-M., Czerniewicz, L., Lilley, W., Bute, S., Crean, A., Abegglen, S., Burns, T., Sinfield, S., & Jandrić, P. (2023). Understanding digital inequality: A theoretical kaleidoscope. *Postdigital Science and Education*, 5(3), 894-932.
28. Laskar, M. H. (2023). Examining the emergence of digital society and the digital divide in India: A comparative evaluation between urban and rural areas. *Frontiers in Sociology*, 8, 1145221.
29. Lin, M.-I. (2020). Educational upward mobility. Practices of social changes-research on social mobility and educational inequality. *Int'l J. Soc. Sci. Stud.*, 8, 25.
30. Loh, R. S. M., Kraaykamp, G., & van Hek, M. (2023). Student ICT resources and intergenerational transmission of educational inequality: Testing implications of a reproduction and mobility perspective. *European Sociological Review*, 39(5), 804-819.
31. Ma, J. K.-H. (2021). The digital divide at school and at home: A comparison between schools by socioeconomic level across 47 countries. *International Journal of Comparative Sociology*, 62(2), 115-140.
32. Mac Fadden, I., García-Alonso, E.-M., & López Meneses, E. (2024). Science mapping of AI as an educational tool exploring digital inequalities: A sociological perspective. *Multimodal Technologies and Interaction*, 8(12), 106.
33. Matzat, U., Van Ingen, E., Maasen, S., & Passoth, J. (2020). Social inequality and the digital transformation of Western society: what can stratification research and digital divide studies learn from each other. *Soziologie des Digitalen-Digitale Soziologie*, 23, 379-397.
34. Mauermeister, S., Biere, L., & Steinhardt, I. (2025). Measuring the Digital Divide among students caused by Artificial Intelligence.
35. Mesa, D. (2023). Digital divide, e-government and trust in public service: The key role of education. *Frontiers in Sociology*, 8, 1140416.
36. Naseer, F. (2024). Digital Marginality, Social Inequality, and Urban Exclusion: A Sociological Study of Access, Power, and Digital Divide in Quetta. *The Critical Review of Social Sciences Studies*, 2(2), 1849-1872.
37. Neves, B. B., & Mead, G. (2021). Digital technology and older people: Towards a sociological approach to technology adoption in later life. *Sociology*, 55(5), 888-905.
38. Oyedemi, T. D. (2012). Digital inequalities and implications for social inequalities: A study of Internet penetration amongst university students in South Africa. *Telematics and informatics*, 29(3), 302-313.
39. Pettalongi, S. S., Londol, M. M., & Umboh, S. E. (2024). Disparities in digital education: Socioeconomic barriers to accessing online learning resources. *International Journal of Social and Human*, 1(3), 181-189.
40. Pitzalis, M., & Porcu, M. (2024). Digital Capital and Cultural Capital in education: Unravelling intersections and distinctions that shape social differentiation. *British Educational Research Journal*, 50(6), 2753-2776.
41. Puckett, C. (2022). Digital Adaptability: A new measure for digital inequality research. *Social science computer review*, 40(3), 641-662.

42. Ragnedda, M., & Muschert, G. W. (2013). *The digital divide: The Internet and social inequality in international perspective*. Routledge.
43. Reynolds, R., Aromi, J., McGowan, C., & Paris, B. (2022). Digital divide, critical-, and crisis-informatics perspectives on K-12 emergency remote teaching during the pandemic. *Journal of the Association for Information Science and Technology*, 73(12), 1665-1680.
44. Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., Schulz, J., Hale, T. M., & Stern, M. J. (2015). Digital inequalities and why they matter. *Information, communication & society*, 18(5), 569-582.
45. Rolfe, H. (2017). Inequality, social mobility and the new economy: Introduction. *National Institute Economic Review*, 240(1), R1-R4.
46. Rydzewski, P. (2025). Digital inequality and sustainable development. *Problemy Ekorożwoju*, 20(1), 96-108.
47. Sanders, C. K., & Scanlon, E. (2021). The digital divide is a human rights issue: Advancing social inclusion through social work advocacy. *Journal of human rights and social work*, 6(2), 130-143.
48. Selwyn, N. (2010). Degrees of digital division: Reconsidering digital inequalities and contemporary higher education. *Rev. U. Soc. Conocimiento*, 7, 33.
49. Selwyn, N., & Facer, K. (2014). The sociology of education and digital technology: past, present and future. *Oxford Review of Education*, 40(4), 482-496.
50. Sepúlveda, D., & Lizama-Loyola, A. (2022). Different routes to university: Exploring intersectional and multi-dimensional social mobility under a comparative approach in Chile. *Sociological Research Online*, 27(1), 154-171.
51. Sianou-Kyrgiou, E., & Tsiplakides, I. (2011). Digital divide: students' use of the internet and emerging forms of social inequalities. In *Research on e-learning and ICT in education* (pp. 55-68). Springer.
52. Tang, Q., Kamarudin, S., Rahman, S. N. A., & Zhang, X. (2025). Bridging Gaps in Online Learning: A Systematic Literature Review on the Digital Divide. *Journal of Education and Learning*, 14(1), 161-176.
53. Van de Oudeweetering, K., & Agirdag, O. (2018). MOOCS as accelerators of social mobility? A systematic review. *Journal of Educational Technology & Society*, 21(1), 1-11.
54. Wang, Y., & Huang, M. (2025). Review of social mobility, social inequality, and the role of higher education. *British Journal of Sociology*, 76(2), 476.
55. Wei, C. (2026). Digital Literacy, Educational Inequality, and Social Mobility: Evidence from Developing Countries in Asia. *Social Reports*, 1(2), 21-41.
56. Zilian, S. S., & Zilian, L. S. (2020). Digital inequality in Austria: Empirical evidence from the survey of the OECD "Programme for the International Assessment of Adult Competencies". *Technology in Society*, 63, 101397.



2026 by the authors; Journal of Global Social Transformation (JGST). This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).